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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/886,585	06/21/2001	Daniel M. Lavery	2207/11237	6346

7590 06/30/2005

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EXAMINER	
RAMPURIA, SATISH	

ART UNIT	PAPER NUMBER
2191	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/886,585	LAVERY ET AL.	
	Examiner	Art Unit	
	Satish S. Rampuria	2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the RCE filed on 03/30/2005.

2. Claims 1-30 are pending.

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Mar 30, 2005 has been entered.

Specification

4. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.
Specification is missing the Summary (section (g)) section.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(f) BACKGROUND OF THE INVENTION.

(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-12 and 22-23 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 is non-statutory because the language of the claim raises a question as to whether the claim is directed merely to an abstract idea that is not tied to environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. Claim recites method of executing a code, representing functional descriptive material without a computer readable medium or computer implemented method per se is not tangibly embodied. Claims 2-12 are directly of indirectly dependent on claim 1 and further support method of executing a code without a computer readable medium or computer implemented method per se are not tangibly embodied thus amounts to only abstract idea and are nonstatutory.

Claim 22 is non-statutory because the language of the claim raises a question as to whether the claim is directed merely to an abstract idea that is not tied to environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. Claim recites method of compiling, representing functional descriptive material without a computer readable medium or computer implemented method per se are not tangibly embodied. Claim 23 is dependent on claim 22 and further support method of compiling without a computer readable medium or computer implemented method per se are not tangibly embodied thus amounts to only abstract idea and are nonstatutory.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Publication No. 2002/0144083 to Wang et al., hereinafter called Wang, in view of US Patent No. 6,754,888 to Dryfoos et al., hereinafter called Dryfoos.

Per claim 1:

Wang discloses:

- A method for executing a code (page 7, paragraph 88 "executing instructions"), comprising:

- receiving an instruction (page 3, paragraph 47 "an event triggers the invocation and execution");
- determining whether the instruction is a trigger instruction (page 1, paragraph [0055] "...the instruction that had been executed a predetermined number of instructions prior in the dynamic execution stream is marked as a potential basic trigger");
- executing an auxiliary code (page 3, paragraph 44, "the instruction is executed" and page 3, paragraph 47 "execution of a pre-computation slice (p-slice code)").

Wang does not explicitly disclose selecting an entry in a trigger table, if the instruction is a trigger instruction, the entry associated with the trigger instruction and entry is referenced by the trigger table.

However, Dryfoos, in an analogous computer system discloses selecting an entry in a trigger table, if the instruction is a trigger instruction, the entry associated with the trigger instruction and entry is referenced by the trigger table (col. 1, lines 55-67 to col. 2, lines 1-2 "... defining a table... detecting a debug trigger point during execution of the program, the method further includes referencing the table to ascertain at least one of whether the trigger point is within a program area of the storage of the computing environment, or referencing the table to determine whether the trigger point is included within a program to be excluded from debugging").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of selecting an entry in a trigger table, the entry associated with the trigger instruction and entry is referenced by the trigger table as taught

by Dryfoos in the method of executing the code as taught by Wang. The modification would be obvious because of one of ordinary skill in the art would be motivated to select an entry in a trigger table to differentiate between instruction in the application programs and instructions in the operating system's service routine as suggested by Dryfoos (col. 1, lines 45-52).

Per claim 2:

The rejection of claim 1 is incorporated, and further, Wang disclose:

- spawning a new thread, the new thread executing instructions included in the auxiliary code (page 5, paragraph 67 "executes a spawn instruction to initiate the speculative thread, and then returns". Also, see fig. 9).

Per claim 3:

The rejection of claim 2 is incorporated, and further, Wang disclose:

- executing the new thread concurrently with a parent thread, the parent thread including the trigger instruction (page 5, paragraph 67 "executes a spawn instruction" and page 47, paragraph 47 "Speculative threads... spawned under... conditions... encountering a basic trigger... occurs when a designated instruction in the main (parent) thread is retired, or... encountering a chaining trigger, when one speculative thread explicitly spawns another speculative thread").

Per claim 4:

Wang discloses:

- A method for executing a code (page 7, paragraph 88 "executing instructions"), comprising:
- receiving a trigger instruction (page 3, paragraph 47 "an event triggers the invocation and execution");
- executing a p-slice code (page 3, paragraph 44, "the instruction is executed" and page 3, paragraph 47 "execution of a pre-computation slice (p-slice code)").

Wang does not explicitly disclose selecting an entry in a trigger table, the entry associated with the trigger instruction and entry is referenced by the trigger table.

However, Dryfoos, in an analogous computer system discloses selecting an entry in a trigger table, the entry associated with the trigger instruction and entry is referenced by the trigger table (col. 1, lines 55-67 to col. 2, lines 1-2 "... defining a table... detecting a debug trigger point during execution of the program, the method further includes referencing the table to ascertain at least one of whether the trigger point is within a program area of the storage of the computing environment, or referencing the table to determine whether the trigger point is included within a program to be excluded from debugging").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of selecting an entry in a trigger table, the entry associated with the trigger instruction and entry is referenced by the trigger table as taught by Dryfoos in the method of executing the code as taught by Wang. The modification would be

obvious because of one of ordinary skill in the art would be motivated to select an entry in a trigger table to differentiate between instruction in the application programs and instructions in the operating system's service routine as suggested by Dryfoos (col. 1, lines 45-52).

Per claim 5:

The rejection of claim 4 is incorporated, and further, Wang disclose:

- spawning a new thread, the new thread executing instructions included in the auxiliary code (page 5, paragraph 67 "executes a spawn instruction to initiate the speculative thread, and then returns" and page 3, paragraph 47 "execution of a pre-computation slice (p-slice code)"). Also, see fig. 9).

Per claim 6:

The rejection of claim 5 is incorporated, and further, Wang disclose:

- executing the new thread concurrently with a parent thread, the parent thread including the trigger instruction (page 5, paragraph 67 "executes a spawn instruction" and page 47, paragraph 47 "Speculative threads... spawned under... conditions... encountering a basic trigger... occurs when a designated instruction in the main (parent) thread is retired, or... encountering a chaining trigger, when one speculative thread explicitly spawns another speculative thread").

Per claim 7:

The rejection of claim 6 is incorporated, and further, Wang disclose:

- storing state information from the parent thread before spawning the new thread (page 4, paragraph 64 "The main thread stores a sequence of values into the live-in buffer before spawning the speculative thread").

Per claim 8:

The rejection of claims 7 and 9 are incorporated, respectively, and further, Wang disclose:

- copying the state information for use in the new thread (page 3, paragraph 48"Copying necessary live-in values into the hardware thread context's register").

Per claim 9:

The rejection of claim 6 is incorporated, and further, Wang disclose:

- storing a register value of the parent thread before spawning the new thread. The recited in this claim are similar to those recited in claim 7 and rejected under the same rational set forth in connection with the rejection of claim 7 above.

Per claim 10:

The rejection of claim 9 is incorporated, and further, Wang disclose:

- copying the register value of the parent thread for use in the new thread. The recited in this claim are similar to those recited in claim 8 and rejected under the same rational set forth in connection with the rejection of claim 8 above.

Per claim 11:

The rejection of claim 4 is incorporated, respectively, and further, Wang disclose:

- wherein the entry in the trigger table is selected by associative lookup of the trigger instruction. The recited in this claim are similar to those recited in claim 4 and rejected under the same rational set forth in connection with the rejection of claim 4 above.

Per claim 12:

The rejection of claim 4 is incorporated, and further, Wang disclose:

- reading an instruction pointer for the p-slice code from the entry in the trigger table (page6, paragraph 85 "Each entry in the OSC includes a counter, the instruction pointer (IP) of a load of interest, and the address of the first instruction in a pre-computation slice, which identifies which pre-computation slice corresponds to this OSC entry").

Claim 13 is the computer program product claim corresponding to method claim 1 and rejected under the same rational set forth in connection with the rejection of claim 1 above.

Claim 14 is the computer program product claim corresponding to method claim 2 and rejected under the same rational set forth in connection with the rejection of claim 2 above.

Claims 15 and 18, 21 are the system claim corresponding to method claim 1 and rejected under the same rational set forth in connection with the rejection of claim 1 above, as noted above and Wang also discloses system, see FIG. 1 and associated text.

Claims 16 and 19 are the system claim corresponding to method claim 2 and rejected under the same rational set forth in connection with the rejection of claim 2 above, as noted above and Wang also discloses system, see FIG. 1 and associated text.

Claims 17and 20 are the system claim corresponding to method claim 7 and rejected under the same rational set forth in connection with the rejection of claim 7 above, as noted above and Wang also discloses system, see FIG. 1 and associated text.

Per claims 22 and 24:

Wang discloses:

- A method for compiling (page 2, paragraph 33 "each bundle is comprised of three instructions grouped together by the compiler"), comprising:
- receiving a function body (page 4, paragraph 55, "Whenever a load (functions or code) is executed"), the function body comprising a trigger instruction (page 4, paragraph 55 "a... number of instructions prior in the... execution... marked as a potential basic trigger");
- outputting an auxiliary code associated with the function body and the trigger instruction (page 3, paragraph 44, "the instruction is executed" and page 3, paragraph 47 "execution of a pre-computation slice (p-slice code)").

Wang does not explicitly disclose creating an entry in a trigger table the entry associated with the trigger instruction and the auxiliary code.

However, Dryfoos, in an analogous computer system discloses creating an entry in a trigger table the entry associated with the trigger instruction and the auxiliary code (col. 1, lines

55-67 to col. 2, lines 1-2 "... defining a table... detecting a debug trigger point during execution of the program, the method further includes referencing the table to ascertain at least one of whether the trigger point is within a program area of the storage of the computing environment, or referencing the table to determine whether the trigger point is included within a program to be excluded from debugging").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of creating an entry in a trigger table as taught by Dryfoos in the method of executing the code as taught by Wang. The modification would be obvious because of one of ordinary skill in the art would be motivated to select an entry in a trigger table to differentiate between instruction in the application programs and instructions in the operating system's service routine as suggested by Dryfoos (col. 1, lines 45-52).

Per claim 23:

The rejection of claims 22 and 24 is incorporated, respectively, and further, Wang disclose:

- creating a stub block, the stub block comprising a spawn instruction, the spawn instruction configured to spawn a new thread, the new thread configured to execute the auxiliary code (page 5, paragraph 67 "executes a spawn instruction to initiate the speculative thread, and then returns". Also, see fig. 9). It is inherent to create the stub block in order to execute the spawn instructions.

Per claim 24:

Wang discloses:

- A method for compiling (page 2, paragraph 33 "each bundle is comprised of three instructions grouped together by the compiler"), comprising:
- receiving a function body (page 4, paragraph 55, "Whenever a load (functions or code) is executed"), the function body comprising a trigger instruction (page 4, paragraph 55 "a... number of instructions prior in the... execution... marked as a potential basic trigger");
- outputting a p-slice code associated with the function body and the trigger instruction (page 3, paragraph 44, "the instruction is executed" and page 3, paragraph 47 "execution of a pre-computation slice (p-slice code)").

Wang does not explicitly disclose creating an entry in a trigger table, the entry associated with the trigger instruction and the p-slice code.

However, Dryfoos, in an analogous computer system discloses creating an entry in a trigger table, the entry associated with the trigger instruction and the p-slice code (col. 1, lines 55-67 to col. 2, lines 1-2 "... defining a table... detecting a debug trigger point during execution of the program, the method further includes referencing the table to ascertain at least one of whether the trigger point is within a program area of the storage of the computing environment, or referencing the table to determine whether the trigger point is included within a program to be excluded from debugging").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of creating an entry in a trigger table as

taught by Dryfoos in the method of executing the code as taught by Wang. The modification would be obvious because of one of ordinary skill in the art would be motivated to select an entry in a trigger table to differentiate between instruction in the application programs and instructions in the operating system's service routine as suggested by Dryfoos (col. 1, lines 45-52).

Per claim 25:

The rejection of claim 24 is incorporated, respectively, and further, Wang disclose:

- receiving the p-slice code associated with the function body and the trigger instruction (page 3, paragraph 47 "an event triggers the invocation and execution of a pre-computation").

Per claim 26:

The rejection of claim 24 is incorporated, respectively, and further, Wang disclose:

- generating the p-slice code (page 4, paragraph 54 "create the pre-computation slice for each load") associated with the function body and the trigger instruction (page 5, paragraph 76 "process... triggers to basic pre-computation slices").

Per claim 27:

The rejection of claim 24 is incorporated, respectively, and further, Wang disclose:

- creating a stub block, the stub block comprising a spawn instruction, the spawn instruction configured to spawn a new thread, the new thread configured to execute the p-

slice code. The recited in this claim are similar to those recited in claim 23 and rejected under the same rational set forth in connection with the rejection of claim 23 above.

Per claim 28:

The rejection of claim 24 is incorporated, respectively, and further, Wang disclose:

- adding store instructions to the stub block, the store instructions configured to store state information of a current thread (page 4, paragraph 63 "Using on-chip memory... because without flash-copy... one thread cannot directly access the registers of another thread") the state information of the current thread including values contained in live-in registers of the new thread (page 4, paragraph 64 "The main thread stores a sequence of values into the live-in buffer before spawning the speculative thread").

Claims 29 and 30 are the computer program product claim corresponding to method claim 24 and rejected under the same rational set forth in connection with the rejection of claim 24 above.

Response to Arguments

9. Applicant's arguments with respect to claim 1, 13, 15, 22, 24, and 29 has been considered but are moot in view of new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Satish S. Rampuria** whose telephone number is **(571) 272-3732**. The examiner can normally be reached on **8:30 am to 5:00 pm** Monday to Friday except every other Friday and federal holidays. Any inquiry of a general nature or relating to the status of this application should be directed to the **TC 2100 Group receptionist: 571-272-2100**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Tuan Q. Dam** can be reached on **(571) 272-3695**. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Satish S. Rampuria
Patent Examiner
Art Unit **2191**
06/27/2005

ANTONY NGUYEN-BA
PRIMARY EXAMINER